Name:

at1118paper: Complete the Square (v419)

Example

By completing the square, find both solutions to the given equation:

$$x^2 - 54x = -608$$

Add $\left(\frac{-54}{2}\right)^2$, which equals 729, to both sides of the equation.

$$x^2 - 54x + 729 = 121$$

Factor the left side.

$$(x - 27)^2 = 121$$

Undo the squaring. We need to consider both $\pm\sqrt{121}$.

$$\begin{array}{rcl} x - 27 = -11 & \text{or} & x - 27 = 11 \\ x = -38 & \text{or} & x = -16 \end{array}$$

Question 1

By completing the square, find both solutions to the given equation:

$$x^2 - 42x = -392$$

Question 2

By completing the square, find both solutions to the given equation:

$$x^2 - 8x = 308$$

Question 3

By completing the square, find both solutions to the given equation:

$$x^2 + 54x \;=\; -725$$

Question 4

By completing the square, find both solutions to the given equation:

$$x^2 + 10x \;=\; 0$$

Question 5

By completing the square, find both solutions to the given equation:

$$x^2 + 52x \;=\; -651$$

Question 6

By completing the square, find both solutions to the given equation:

$$x^2 + 38x \;=\; 264$$